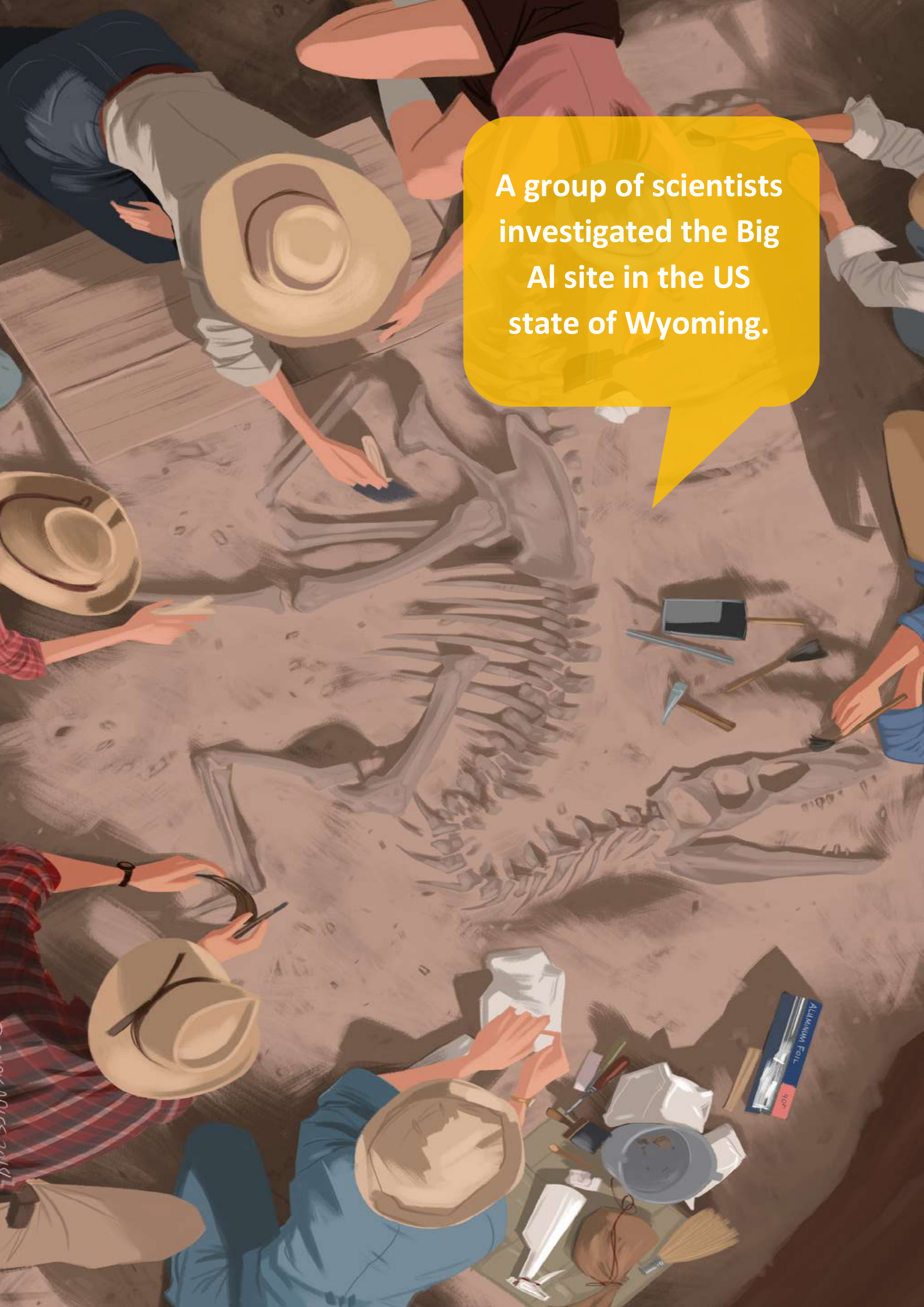
Adventures From the Land of Dinosaurs

The Sad Story of Big Al

THINK
DIGITAL ACADEMY

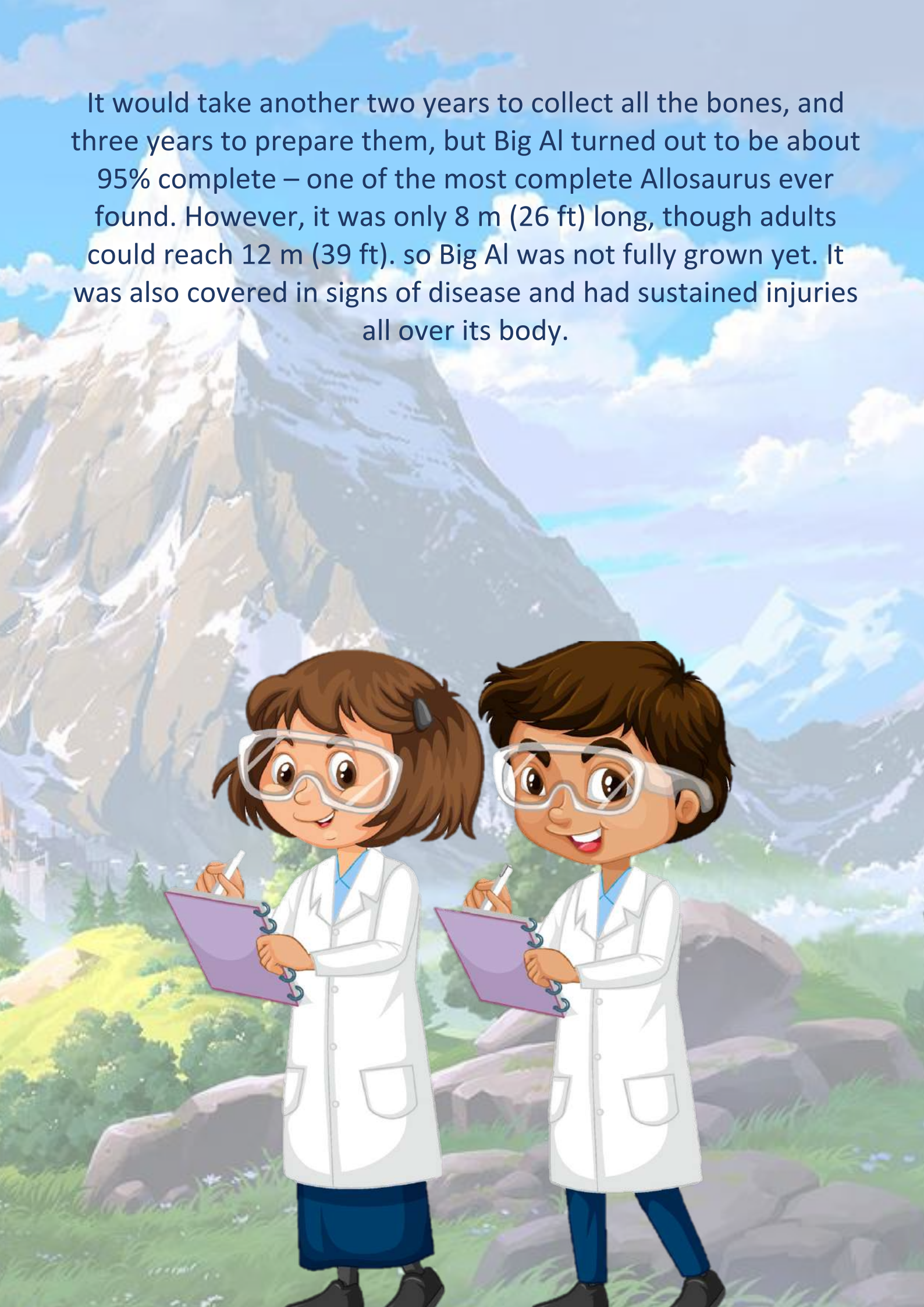
The first Allosaurus fossil was discovered in 1869, but wouldn’t be officially named until 1877. And while many specimens of this Jurassic carnivore have been found since, it wasn’t until 1991 that arguably the most famous Allosaurus was discovered. Scientists called it Big Al.


A group of scientists investigated the Big Al site in the US state of Wyoming.
ALUMINUM FOIL

The fossil was about 145-150 million years old. Since the bones were already partially exposed and it was September, the crew had to work quickly before winter arrived. With the help of lots of volunteers, they finished the excavation in just eight days. Public tours to the site were organized.

Over 4000 people made the trek out to see the dinosaur dig, including kids who were driven in on school buses.

It would take another two years to collect all the bones, and three years to prepare them, but Big Al turned out to be about 95% complete – one of the most complete Allosaurus ever found. However, it was only 8 m (26 ft) long, though adults could reach 12 m (39 ft). so Big Al was not fully grown yet. It was also covered in signs of disease and had sustained injuries all over its body.

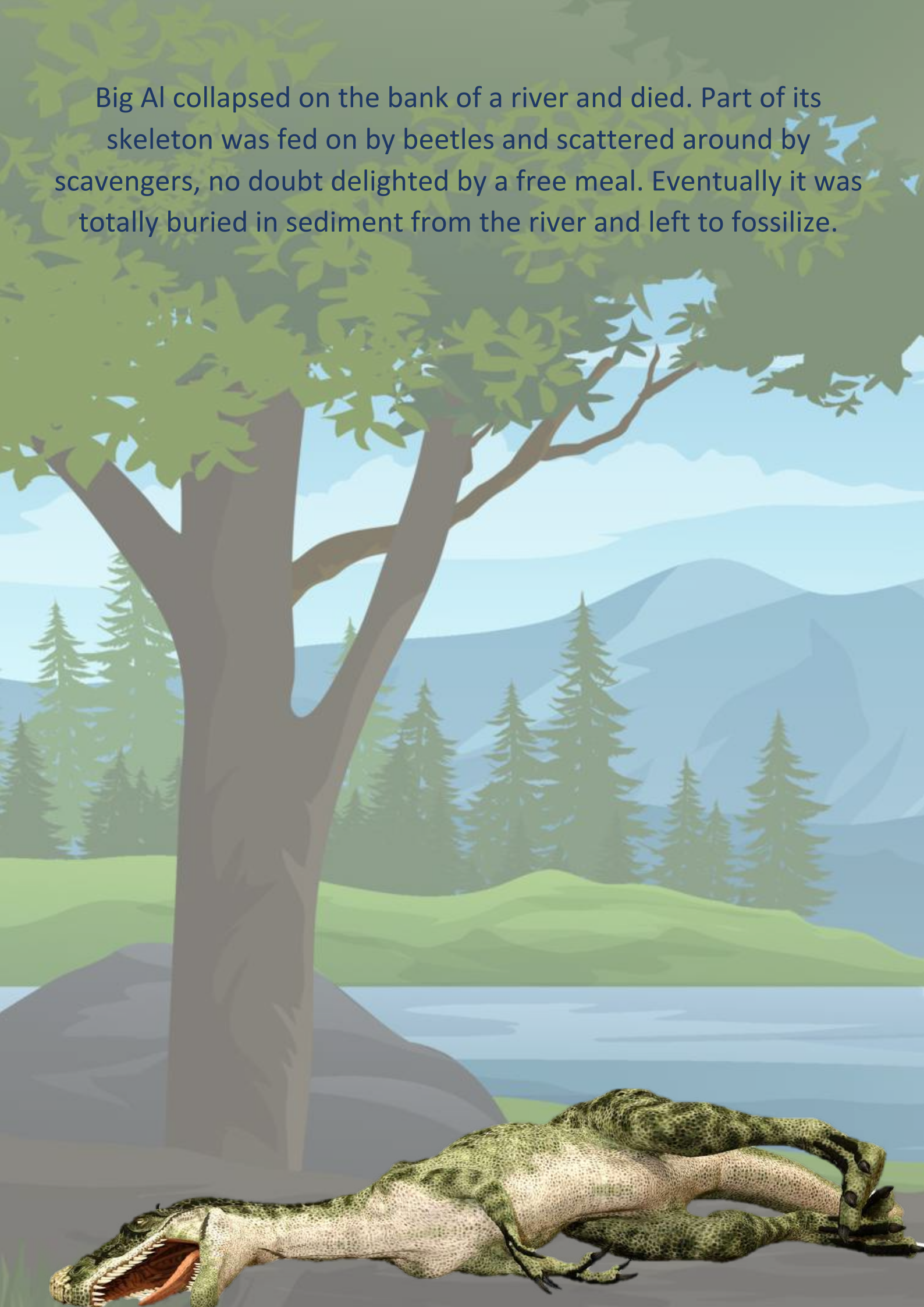


One of the worst was an infected toe bone that would have caused poor Big Al to limp.

Allosaurus Foot

We don’t know what caused all the injuries or exactly how Big Al died. But it was not a healthy dinosaur and would’ve struggled to find food and water. At some point it couldn’t go on any longer.

Big Al collapsed on the bank of a river and died. Part of its skeleton was fed on by beetles and scattered around by scavengers, no doubt delighted by a free meal. Eventually it was totally buried in sediment from the river and left to fossilize.



In life Big Al didn’t have a great time, but these days this poorly Allosaurus is a legend!


The BONE Wars

If you think palaeontology has always been a noble profession, think again! In 1877, a bunch of extremely well-preserved dinosaur bones were found at three separate sites in Colorado and Wyoming, USA.

The people who found the bones quickly sent letters to the top palaeontologists of the time – Othniel Charles Marsh and Edward Drinker Cope.

Othniel Charles Marsh

Edward Drinker Cope

Othniel and Edward used to be good friends, but they fell out in 1868 and a 30-year bitter rivalry began. Those letters from 1877 were the start of the Bone Wars – where Othniel and Edward battled each other to see who could find the greatest number of fossils and name the most new species.

Neither Othniel nor Edward had any problems turning to the dark side. They spied on each other, attempted to bribe people, stole fossils and even once got into a fight. Worst of all, when they were finished with a quarry they would blow it up with dynamite, hoping to destroy any fossils they might have missed so their competitor wouldn't find them. All of the fossils were collected on land that had recently been taken from indigenous people.

During the Bone Wars, Edward discovered 56 new dinosaur species, while Othniel found 80. Many famous dinosaurs were discovered for the first time, including Stegosaurus, Apatosaurus ...

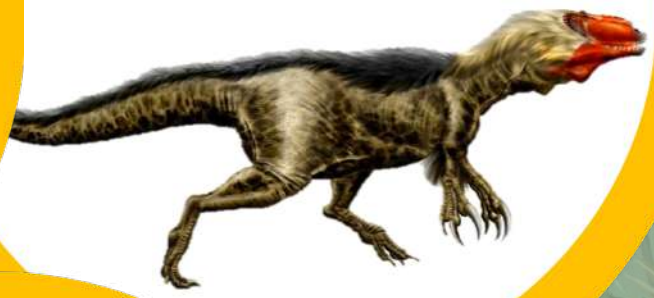
Stegosaurus

Apatosaurus

... Camarasaurus, Dryptosaurus and Nanosaurus.

Camarasaurus

Dryptosaurus

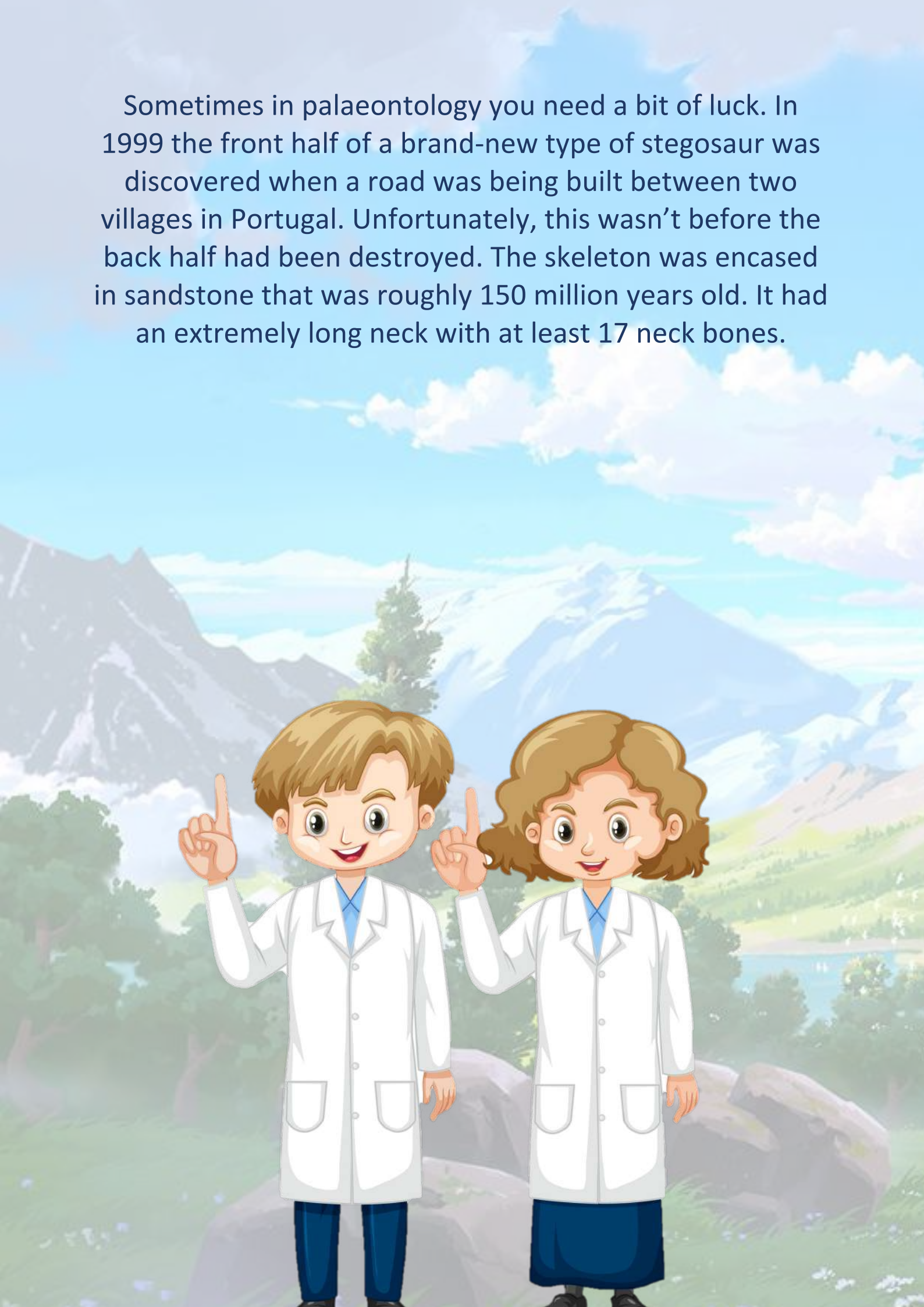


Nanosaurus

The Bone Wars had an impact on how palaeontologists understood Jurassic life, and they also affected how specimens were collected and displayed in museums, and how the public perceived palaeontology! As for Othniel and Edward? Their rivalry left both of them nearly bankrupt.

The TAIL in Two Parts

Sometimes in palaeontology you need a bit of luck. In 1999 the front half of a brand-new type of stegosaur was discovered when a road was being built between two villages in Portugal. Unfortunately, this wasn't before the back half had been destroyed. The skeleton was encased in sandstone that was roughly 150 million years old. It had an extremely long neck with at least 17 neck bones.



In 2009, the stegosaur was named Miragaia.

Then, the same year, something amazing happened. Deep in a government agency vault, a back half of Miragaia was discovered! What were the chances?

The specimen had been stored there for a long time. It hadn't been cleaned up, and it had no collection number or filed notes. This made it hard to find out where it had been found (note to self – always label discoveries), but scientists reckoned it probably came from farmland in central Portugal.

In 2015, a scientist called Francisco Costa started investigating the rediscovered fossils. And since this second specimen had some bones that overlapped with the first one, palaeontologists were able to reconstruct a fairly complete skeleton of Miragaia!

Despite this, they were still not sure why the stegosaur had such a long neck. They had two theories: either it allowed Miragaia to browse for food higher than other animals in its habitat, or it was used as part of a mating display, like the long tail of a peacock.

The back half was in storge for 60 years.


The Final
SUPPER

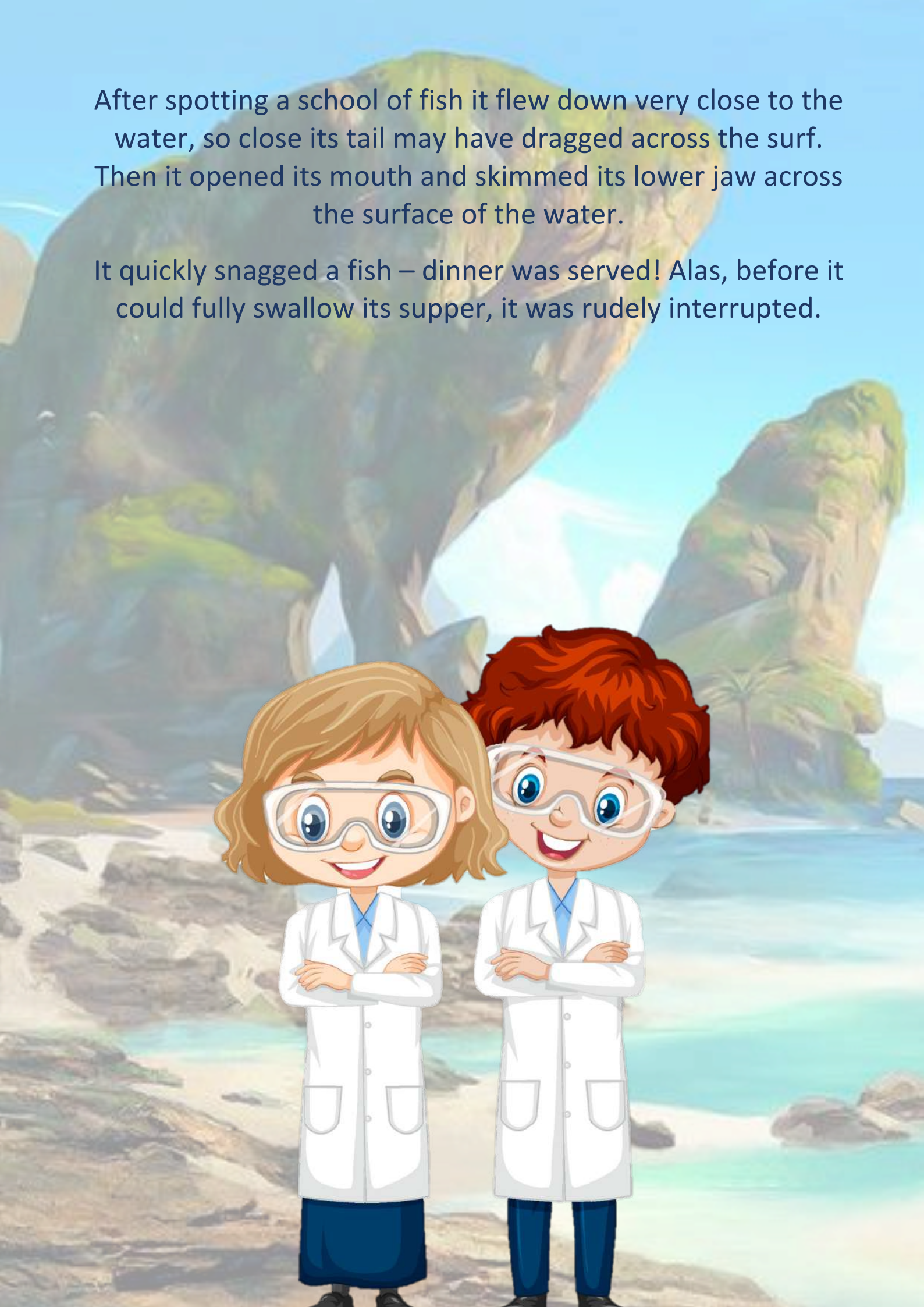
Have you ever eaten anything that disagreed with you? Well, it probably wasn't as bad as the meal in this story…

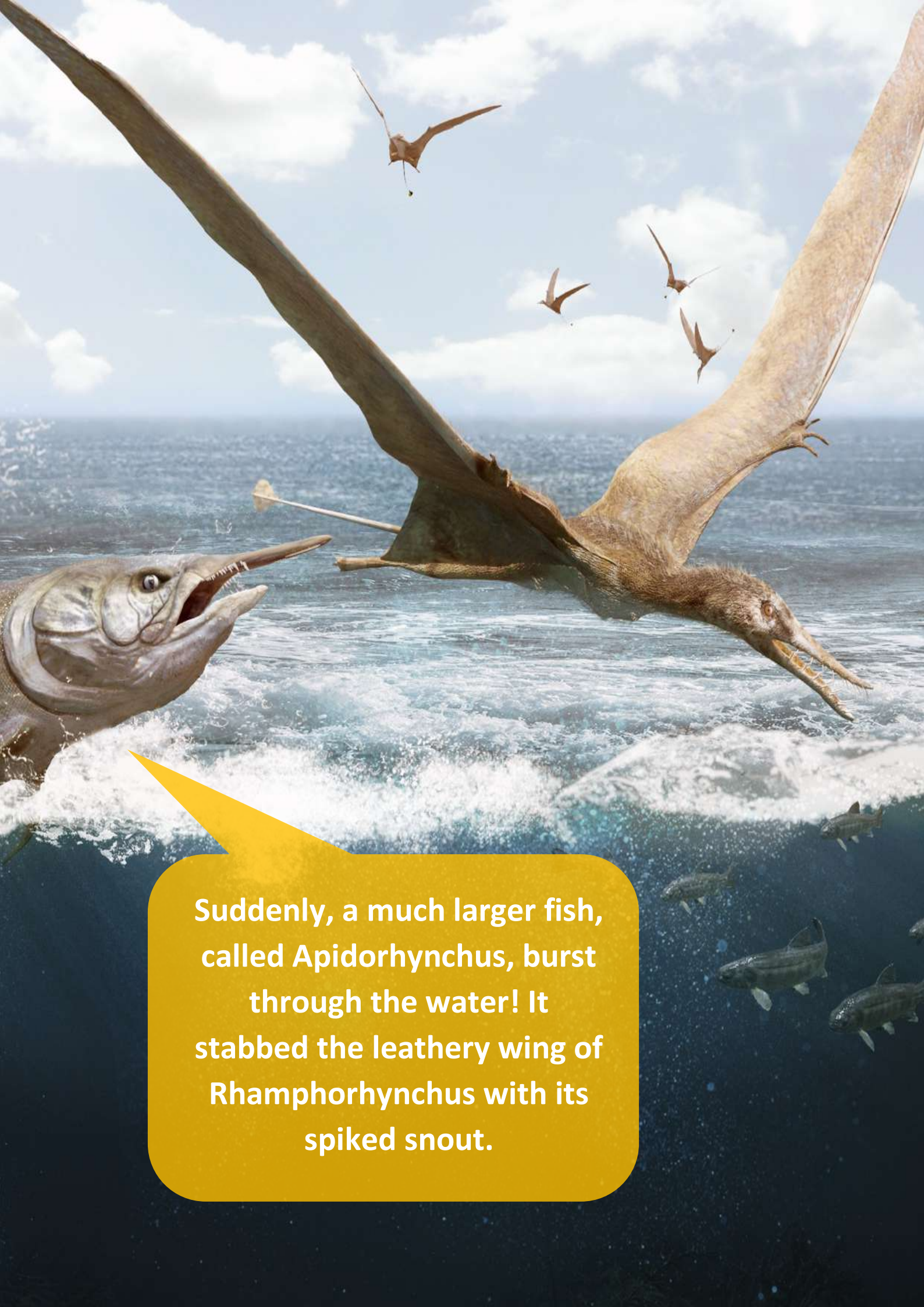
During the Late Jurassic, Germany was a group of islands with lagoons at the edge of the ocean. The limestone that formed from the soft mud on the lagoon floor is full of amazing fossils, including the most famous specimen of Archaeopteryx, one of the first obvious links between dinosaurs and birds.

In 2009, a fossil from this limestone was discovered that told a dramatic story that goes something like this. A small pterosaur named Rhamphorhynchus was flying above the lagoon looking for a snack.

After spotting a school of fish it flew down very close to the water, so close its tail may have dragged across the surf. Then it opened its mouth and skimmed its lower jaw across the surface of the water.

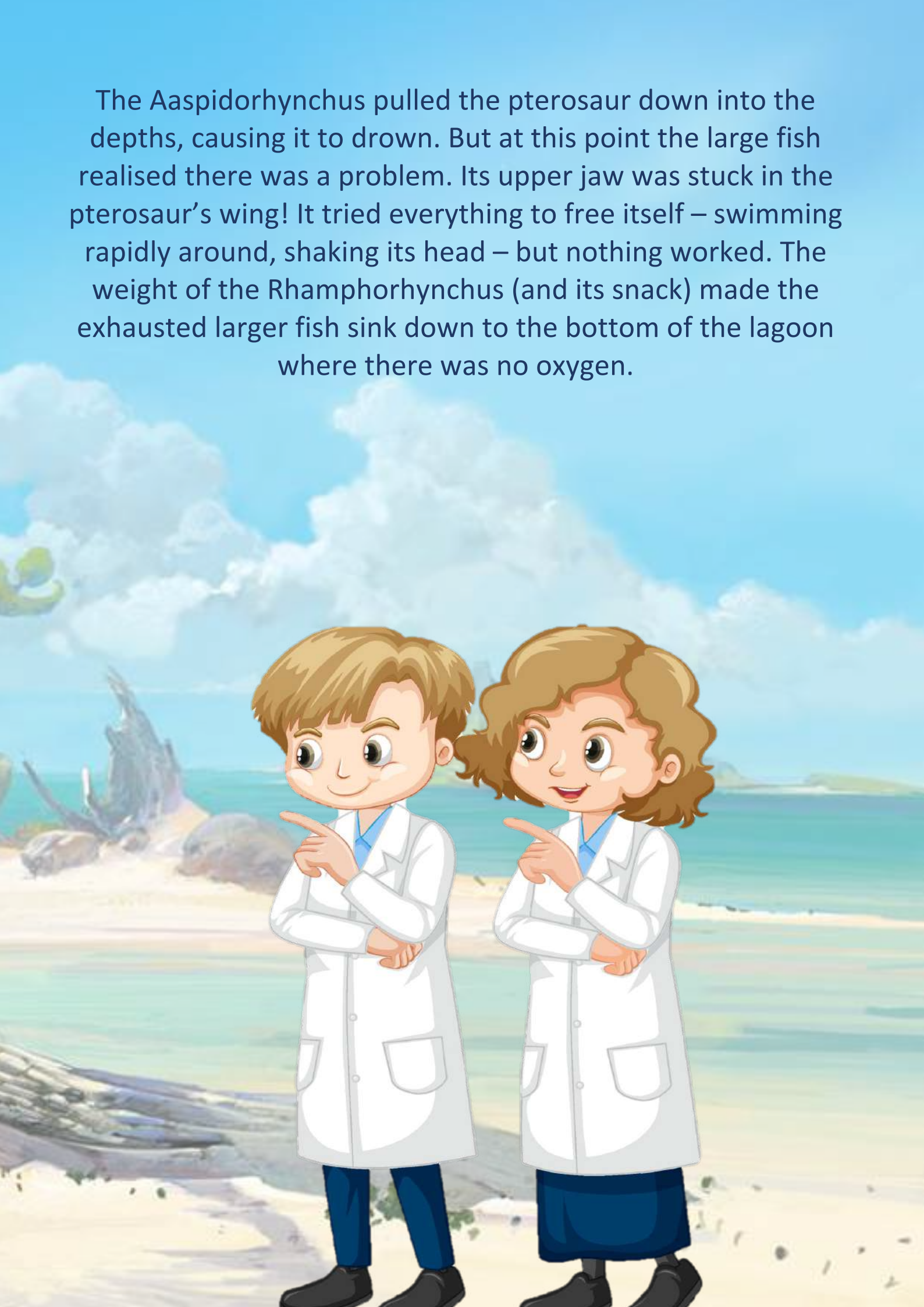
It quickly snagged a fish – dinner was served! Alas, before it could fully swallow its supper, it was rudely interrupted.





Suddenly, a much larger fish, called Apidorhynchus, burst through the water! It stabbed the leathery wing of Rhamphorhynchus with its spiked snout.

The Aaspidorhynchus pulled the pterosaur down into the depths, causing it to drown. But at this point the large fish realised there was a problem. Its upper jaw was stuck in the pterosaur's wing! It tried everything to free itself – swimming rapidly around, shaking its head – but nothing worked. The weight of the Rhamphorhynchus (and its snack) made the exhausted larger fish sink down to the bottom of the lagoon where there was no oxygen.



It died still tangled up with Rhamphorynchus, the two destined to be forever entwined.

The Secrets of the Mine

Being a gravel miner is hard work. And sometimes, instead of digging up gravel, you stumble upon a dinosaur bone and the gravel pit is taken over by excited palaeontologists! That's exactly what happened at Angeac-Charente in south-west France in 2008. And it turned out there wasn't just one bone – oh no – there were a LOT of fossils.

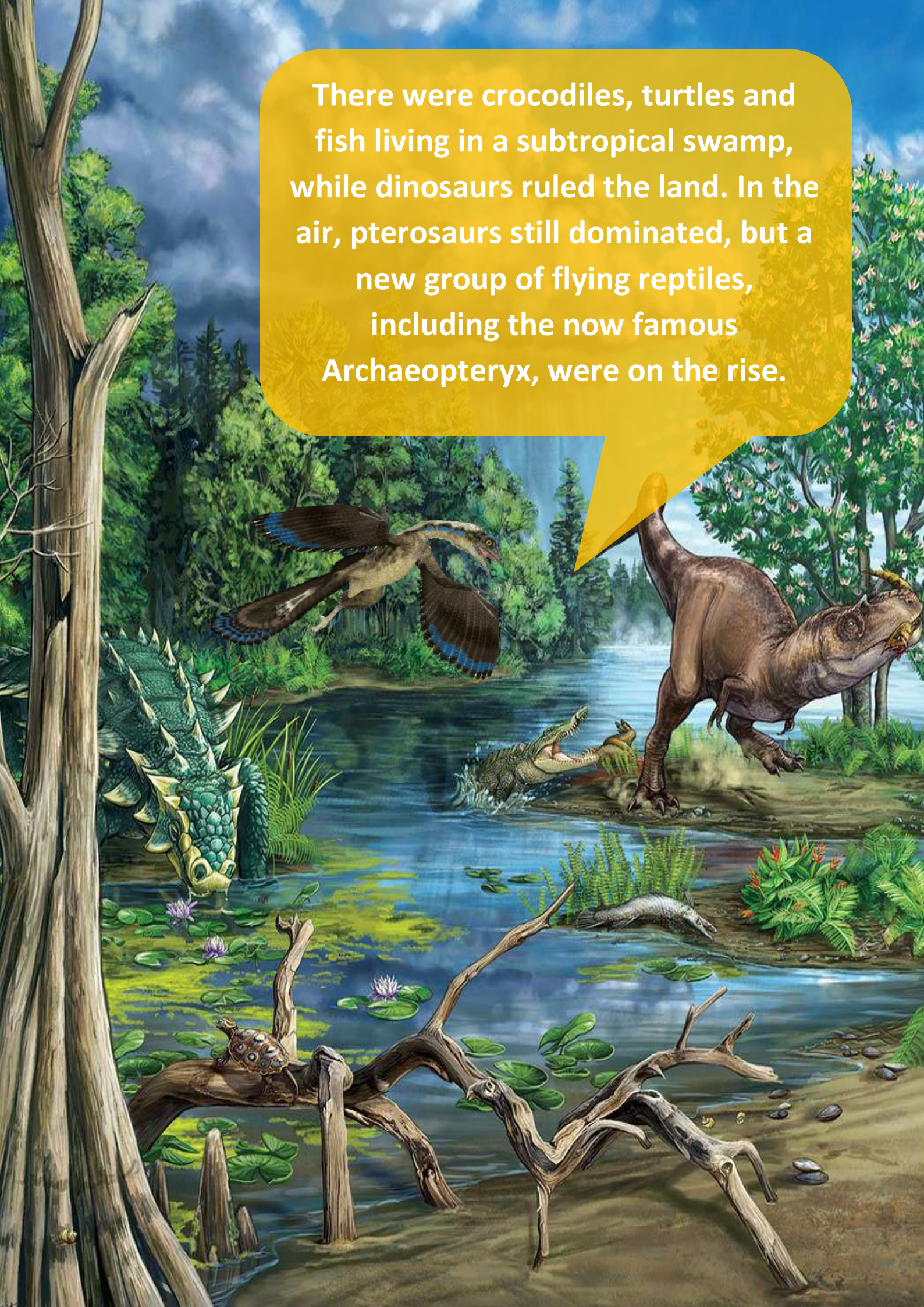
Excavations took place every summer for the next eight years.


In that time a whopping 73000 fossils were uncovered.

And they were made up of different types, including body fossils, like teeth and bones, and trace fossils, such as coprolites (dinosaur poo) and footprints. In total, 3123 were coprolites – that sure is a lot of ancient poo.

The fossils ranged from microscopic pollen grains from prehistoric plants to a giant sauropod leg bone. There was also a mass death pit! The bones of 44 ostrich-like dinosaurs had been heavily trampled, but scientists don’t know how they died. Conditions in the swamp had made it a great environment for preserving fossils, including rare 4D footprints that magically revealed skin scales from lumbering sauropods.

With all of this information, palaeontologists were able to imagine this part of France during the early Cretaceaous, about 140 million years ago. Ferns and conifers were the major plants around, thriving in the humid, subtropical climate.


There were crocodiles, turtles and fish living in a subtropical swamp, while dinosaurs ruled the land. In the air, pterosaurs still dominated, but a new group of flying reptiles, including the now famous Archaeopteryx, were on the rise.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